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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/484,376	01/14/2000	Oved Shlomo Frank Zucker	APTI:027	9632

7590 10/31/2006

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EXAMINER

CAPUTO, LISA M

ART UNIT	PAPER NUMBER
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2876

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/484,376

Applicant(s)

ZUCKER, OVED SHLOMO FRANK

Examiner

Lisa M. Caputo

Art Unit

2876

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1 September 2006 has been entered.

Drawings

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (i.e. conventional motor control architecture). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings are informal (i.e. hand-drawn with some hand-written reference numbers). Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer

Art Unit: 2876

prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker et al. [US 6,218,682-referred as Zucker].

Re claim 1: Zucker discloses an apparatus comprising:

an optical triggering circuit (optical switch 428) at a first location of the apparatus, wherein the optical triggering circuit generates an optical trigger signal (see col. 10, lines 22+ and figure 4b);

a power circuit (a high voltage source 430) located at a second location of the apparatus remote from the first location, wherein the power circuit includes a light controlled thyristor (LDT) 100 that is responsive to the optical trigger signal generated by the optical triggering circuit (see col. 4, lines 40+);

a signal transmission connection (i.e., the figure 4b shows the signal connection between the optical triggering circuit and the power circuit but not specifically identified in the figure) coupling the optical triggering circuit to the power circuit; and

wherein the power circuit is directly driven by the transmission of the optical trigger signal from the optical triggering circuit to the power circuit via the optical transmission connection.

Zucker does not specifically teach the power circuit includes a photoconductor and the optical cable coupling the optical triggering circuit to the power circuit.

However, Zucker teaches the power circuit having a light controlled thyristor (LDT) 100 which provides an equivalent claimed function of the photoconductor (i.e., a switch that is activated in response to the optical trigger signal generated by the optical triggering circuit), and the signal transmission connection that provides the signal connection between the optical triggering circuit and the power circuit also provides an equivalent claimed function of an optical cable coupling the optical triggering circuit to the power circuit. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to recognize that the apparatus of Zucker could be modified with other switching or triggering means so long as it provides an equivalent function and result. Accordingly, it would have been obvious expedient.

With respect to the specific locations of the optical triggering circuit and the power circuit, i.e., within a substantially benign electronic environment (i.e. cockpit of an aircraft) and remote from the first location within a substantially harsh electronic environment (i.e. a wing structure of the aircraft), respectively, the Examiner finds no structural difference in the claimed invention and the apparatus of Zucker. Accordingly, since Applicant has not clearly defined the structure of the optical triggering circuit and the power circuit at such locations, there are no patentably distinguishable features

Art Unit: 2876

between the claimed invention and the prior art. Therefore, the apparatus of the Zucker meets the claimed structure of the optical triggering circuit and the power circuit.

Furthermore, the specific recitations of the optical triggering circuit and the power circuit locations would have been an obvious intended use of the claimed invention. The claimed invention and the prior art must result in a structural difference in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

Re claim 2: the apparatus further comprising a control processor 442 coupled to the optical triggering circuit, wherein the optical triggering circuit is responsive to receipt of a command signal from the control processor to generate the optical trigger signal (see col. 4, lines 38+; col. 10, lines 24+; and figure 4B).

Re claim 3: Zucker teaches that the optical switching system is utilized in a motor control and switching power supply (see col. 4, lines 37+), and the optical triggering circuit is coupled to the high voltage source 430 which serves as applicant's claimed DC motor (see col. 10, lines 10+)

Re claim 18: Zucker teaches that the optical triggering circuit utilizes a laser diode to generate the optical triggering circuit (see col. 10, lines 46+).

Art Unit: 2876

5. Claims 4-6 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker in view of Beeston et al. [US 4,485,434-referred as Beeston]. The teachings of Zucker have been discussed above.

Re claims 4-6 and claims 16-17: Although Zucker teaches the photoconductor comprises a photoconductivity controlled channel transistor (see col. 9, lines 57+), Zucker fails to teach or fairly suggest the power circuit having at least one leg including a pair of transistors, each transistor including a base coupled in series to a photoconductor, wherein activation of the photoconductor turns on the transistor.

Beeston teaches the power circuit having at least one leg including a pair of transistors 37, 38, each transistor including a base coupled in series to a shunt photoconductor (opto-isolator 46, 45 having a modified electrode structure) wherein activation of the photoconductor turns on the transistor (see col. 4, lines 26+ and figure 1b).

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the power circuit of Beeston in the apparatus of Zucker in order to provide a simplified power circuit to control the power circuit.

6. Claims 7-15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zucker as modified by Beeston as applied to claim 4 above, and further in view of the applicant's admitted prior art of the record. The teachings of Zucker as modified by Beeston have been discussed above.

Zucker as modified by Beeston fails to teach the electrode structure including a plurality of strips formed on a surface of the photoconductive diode, wherein the strips

have a width of about 10 μ m, a thickness of between 0.25-10 μ m, are separated by gaps having a width of about 40 μ m, and can carry at least 20A for 50 ns.

Applicant admitted that a conventional diode can be modified to achieve the operational performance required of the system architecture, namely, a C30808E diode manufactured by EG&G Canada can be modified to carry 20 to 100A for about 50 ns, wherein the electrode structure of C30808E diode manufactured by EG&G Canada includes a plurality of strips formed on a surface of the photoconductive diode, and the strips have a width of about 10 μ m, a thickness of 0.25-10 μ m, are separated by gaps having a width of about 40 μ m, and can carry at least 20A for 50 ns, (see page 8, lines 17+ and figure 6).

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the conventional modifiable diode (i.e., such as a C30808E diode manufactured by EG&G Canada) in the power circuit of Zucker as modified by Beeston in order to achieve the desired operational performance required of the system architecture.

Response to Arguments

7. Applicant's arguments filed 1 September 2006 have been fully considered but they are not persuasive. However, some remarks regarding the arguments are below.

The claim amendments made to claims 1 and 4 have overcome the 35 U.S.C. 112 second paragraph rejection.

Applicant states that claim 17 has not been rejected based on prior art. Examiner respectfully disagrees and submits that in paragraph 3 of the final rejection

Art Unit: 2876

mailed 1 September 2005, claim 17 is rejected over Zucker in view of Beeston.

Although the applicant has amended the claim to be in independent form, the claim remains rejected. See 35 U.S.C. 103 rejection above.

In response to applicants arguments that an optical cable is not claimed, examiner respectfully submits that optical triggering circuit and the power circuit must be connected by optical cable as well known in the art, since the coupling of the optical triggering circuit to the power circuit is done in an optical environment.

Applicant argued with respect to Zucker reference that Zucker does not disclose or suggest locating an optical triggering circuit in a benign electronic environment, while placing a power circuit that is driven by the optical triggering circuit in a harsh electronic environment (see page 5, lines 7+). The Examiner finds no structural difference in the claimed invention and the apparatus of Zucker. Applicant has not clearly defined the structure of the optical triggering circuit and the power circuit at such locations in the claim. There is no patentably distinguishable features between the claimed invention and the prior art. The specific recitations of the optical triggering circuit and the power circuit locations would have been an obvious intended use of the claimed invention. The claimed invention and the prior art must result in a structural difference in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Therefore, the apparatus of the Zucker meets the claimed structure of the optical triggering circuit and the power circuit.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Lisa M. Caputo** whose telephone number is **(571) 272-2388**. The examiner can normally be reached between the hours of 8:30AM to 5:00PM Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee can be reached at **(571) 272-2398**. The fax phone number for this Group is (571) 273-8300.

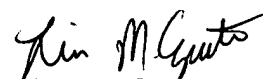
Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [**lisa.caputo@uspto.gov**].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published

Art Unit: 2876

in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Lisa M. Caputo

AU 2876

October 30, 2006